

California

HIGH SCHOOL
EXIT EXAMINATION

Released Items
Spring 2001



MATHEMATICS*

INTRODUCTION

Ninth grade students in public schools throughout the state were administered the California High School Exit Examination (CAHSEE) for the first time in spring 2001. To accommodate the variety of school schedules, the examination was administered at two different times, once in March 2001 and once in May 2001. For each administration, both parts of the CAHSEE were given: (1) English-Language Arts and (2) Mathematics. The CAHSEE blueprints adopted by the State Board of Education in December 2000 specify the content of the examination.

The English-Language Arts section covered the identified reading and writing content standards and included 82 multiple-choice items and two writing tasks. The Mathematics section covered the identified mathematics content standards and included 80 multiple-choice items. All items on the CAHSEE are aligned to the California State Content Standards.

The following 60 released mathematics items are multiple-choice items from the March and May 2001 examinations.

These released items are a representative sample from the March 2001 and May 2001 administrations of the CAHSEE. They do not represent all of the standards that were on the examination. The content strand and answer key for each item can be found on the Item Map at the end of this booklet.

MATHEMATICS**SESSION 1**

Directions: Give only one answer to each question. If you change an answer, be sure that the previous mark is erased completely.

Notes:

- (1) Figures that accompany problems are drawn as accurately as possible EXCEPT when it is stated that a figure is not drawn to scale. All figures lie in a plane unless otherwise noted.
- (2) All numbers used are real numbers. All algebraic expressions represent real numbers unless otherwise stated.

1. $3.6 \times 10^2 =$

- A 3.600
B 36
C 360
D 3,600

M00036

4. Some students attend school 180 of the 365 days in a year. About what part of the year do they attend school?

- A 18%
B 50%
C 75%
D 180%

M00047

2. Which of the following numerical expressions results in a negative number?

- A $(-7) + (-3)$
B $(-3) + (7)$
C $(3) + (7)$
D $(3) + (-7) + (11)$

M00116

5. $4^3 \times 4^2 =$

- A 4^5
B 4^6
C 16^5
D 16^6

M02661

3. The price of a calculator has decreased from \$12.00 to \$9.00. What is the percent of decrease?

- A 3%
B 25%
C 33%
D 75%

M02868

6. A pair of jeans regularly sells for \$24.00. They are on sale for 25% off. What is the sale price of the jeans?

- A \$6.00
B \$18.00
C \$20.00
D \$30.00

M02870

- 7. One hundred is multiplied by a number between 0 and 1. The answer has to be**

A less than 0.
B between 0 and 50 but not 25.
C between 0 and 100 but not 50.
D between 0 and 100.

M00275

- 10. Which of the following is the prime factored form of the lowest common denominator of $\frac{7}{10} + \frac{8}{15}$?**

A 5×1
B $2 \times 3 \times 5$
C $2 \times 5 \times 3 \times 5$
D 10×15

M02826

- 8. What is the fractional equivalent of 60%?**

A $\frac{1}{6}$
B $\frac{3}{6}$
C $\frac{3}{5}$
D $\frac{2}{3}$

M02152

- 11. The square of a whole number is between 1,500 and 1,600. The number must be between**

A 30 and 35.
B 35 and 40.
C 40 and 45.
D 45 and 50.

M00313

- 9. A CD player regularly sells for \$80. It is on sale for 20% off. What is the sale price of the CD player?**

A \$16
B \$60
C \$64
D \$96

M02425

- 12. What is the absolute value of -4 ?**

A -4
B $-\frac{1}{4}$
C $\frac{1}{4}$
D 4

M02667

13. The winning number in a contest was less than 50. It was a multiple of 3, 5, and 6. What was the number?

A 14
B 15
C 30
D It cannot be determined.

M00393

14. Which is the best estimate of 326×279 ?

A 900
B 9,000
C 90,000
D 900,000

M00277

15. The chart below shows the mathematics test scores of three students.

Mathematics Test Scores

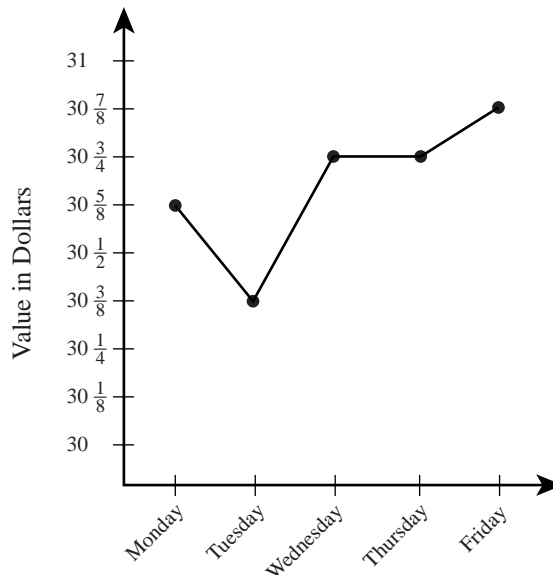
	Test 1	Test 2	Test 3	Test 4
Parisa	7	8	10	6
Hector	6	7	9	10
Charles	8	10	10	9

What is Hector's mean score?

A 6
B 7
C 8
D 9

M00124

16. The graph below represents the closing price of a share of a certain stock for each day of a week.



Which day had the greatest increase in the value of this stock over that of the previous day?

A Tuesday
B Wednesday
C Thursday
D Friday

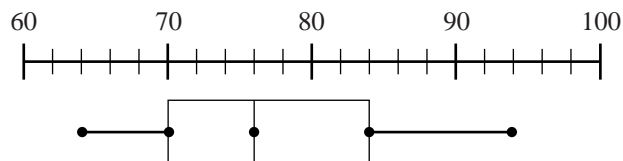
M00295

17. Heather flipped a coin five times, and each time it came up heads. If Heather flips the coin one more time, what is the theoretical probability that it will come up tails?

A $\frac{1}{6}$
B $\frac{1}{2}$
C $\frac{3}{5}$
D $\frac{5}{6}$

M02171

Scores on an Algebra Test



18. According to the box-and-whisker plot, what was the median score on the algebra test?

A 70
B 76
C 84
D 92

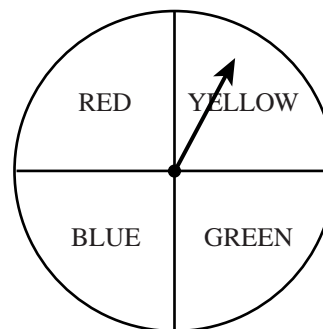
M02053

Company Name	Injuries at Work	Years in Business
<i>Best Drinks</i>	1,000	50
<i>Quality Drinks</i>	100	2

19. *Quality Drinks* used the data in the table above to create an advertisement. It claims, “*Quality Drinks* cares. We have one-tenth the number of injuries at work as *Best Drinks* has.” Why is this claim misleading?

A On the average, *Best Drinks* has more injuries per year.
B The claim should say, “one-fifth the number of injuries.”
C The claim should say, “twenty-five percent fewer injuries.”
D On the average, *Quality Drinks* has more injuries per year.

M02708



20. The spinner shown above is fair. What is the probability that the spinner will not stop on red if you spin it one time?

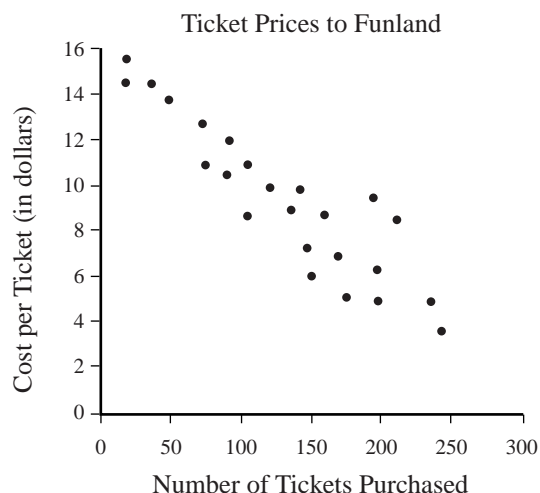
A $\frac{1}{4}$
B $\frac{1}{3}$
C $\frac{3}{4}$
D $\frac{4}{3}$

M00094

21. Joel’s scores on eight English quizzes are 12, 15, 17, 20, 14, 18, 11, 21. What is the upper quartile value of the scores?

A 18
B 19
C 20
D 21

M02502



22. The cost of a ticket to Funland varies according to the season. Which of the following conclusions about the number of tickets purchased and the cost per ticket is best supported by the scatter plot above?
- A The cost per ticket increases as the number of tickets purchased increases.
 - B The cost per ticket is unchanged as the number of tickets purchased increases.
 - C The cost per ticket decreases as the number of tickets purchased increases.
 - D There is no relationship between the cost per ticket and the number of tickets purchased.

M02208

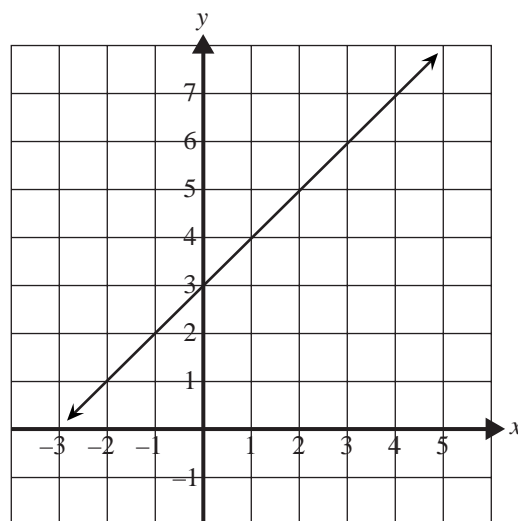
23. Divide a number by 5 and add 4 to the result. The answer is 9.

Which of the following equations matches these statements?

- A $4 = 9 + \frac{n}{5}$
- B $\frac{n}{5} + 4 = 9$
- C $\frac{5}{n} = 4$
- D $\frac{n+4}{5} = 9$

M00050

24. What is the equation of the graph shown below?

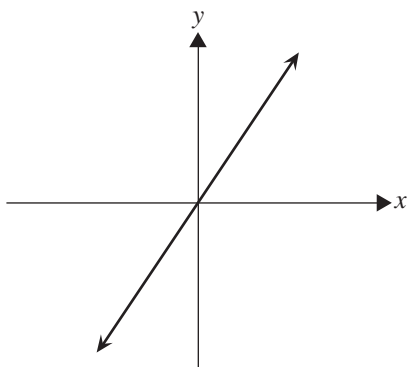


- A $y = x - 1$
- B $y = x + 1$
- C $y = x + 3$
- D $y = x - 3$

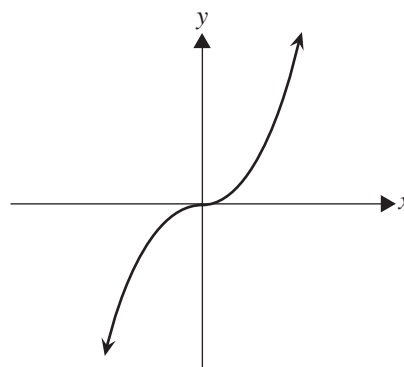
M02035

25. Which of the following could be the graph of $y = x^3$?

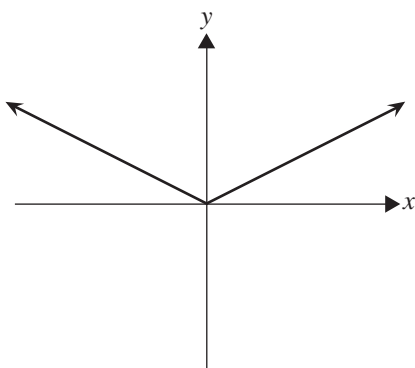
A



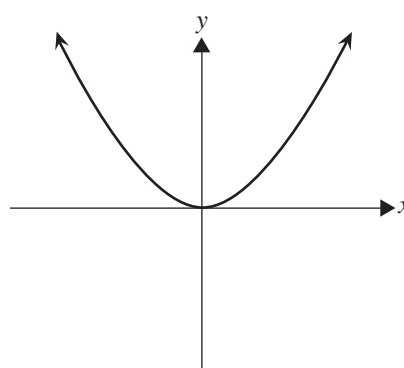
C



B



D



M02200

26. Simplify the expression shown below.

$$(5x^2z^2)(8xz^3)$$

- A $40x^2z^6$
- B $40x^3z^5$
- C $40x^3z^6$
- D $40x^5z^5$

M02009

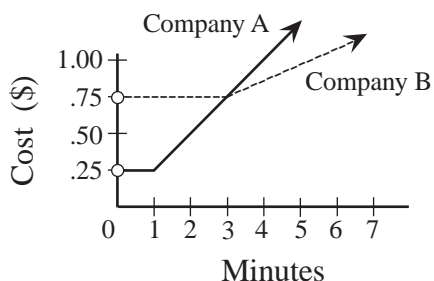
27. Solve for n .

$$2n + 3 < 17$$

- A $n < 2$
- B $n < 3$
- C $n < 5$
- D $n < 7$

M02040

28. The cost of a long distance call charged by each of two telephone companies is shown on the graph below.



Company A is less expensive than Company B for

- A all calls.
- B 3 minute calls only.
- C calls less than 3 minutes.
- D calls longer than 3 minutes.

M02840

29. In a certain room, the number of chairs, c , is equal to 3 times the number of tables, t .

Which equation matches the information?

- A $3 \cdot c = t$
- B $3 \cdot t = c$
- C $3 \cdot c = 3 \cdot t$
- D $c \cdot t = 3$

M00104

30. If $h = 3$ and $k = 4$, then $\frac{hk + 4}{2} - 2 =$

- A 6
- B 7
- C 8
- D 10

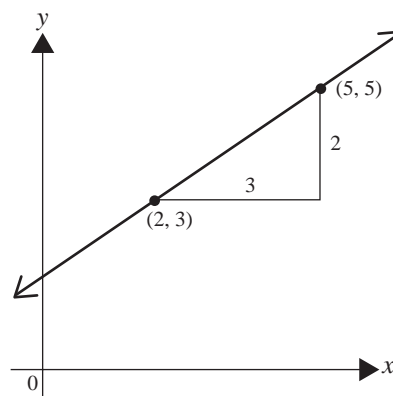
M00052

31. Simplify $(6a^4bc)(7ab^3c)$

- A $13a^4b^3c$
- B $13a^5b^4c^2$
- C $42a^4b^3c$
- D $42a^5b^4c^2$

M02109

32. What is the slope of the line below?



- A $-\frac{3}{2}$
- B $-\frac{2}{3}$
- C $\frac{2}{3}$
- D $\frac{3}{2}$

M02077

33. Tina is filling a 45 gallon tub at a rate of 1.5 gallons of water per minute. At this rate, how long will it take to fill the tub?

- A 30.0 minutes
- B 43.5 minutes
- C 46.5 minutes
- D 67.5 minutes

M02688

34. The graph below shows the value of Whistler Company stock at the end of every other year from 1994 to 2000.



From this graph, which of the following was the most probable value of Whistler Company stock at the end of 1992?

- A -\$10
- B \$1
- C \$10
- D \$20

M02898

A flower shop delivery van traveled these distances during one week: 104.4, 117.8, 92.3, 168.7, and 225.6 miles. How many gallons of gas were used by the delivery van during this week?

35. What other information is needed in order to solve this problem?

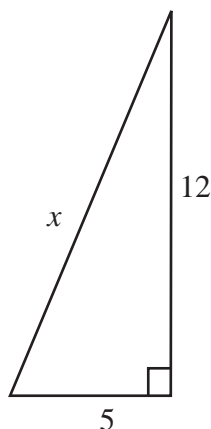
- A The average speed traveled in miles per hour
- B The cost of gasoline per gallon
- C The average number of miles per gallon for the van
- D The number of different deliveries the van made

M00138

36. An airplane flies 678 miles from Seattle to San Francisco. The trip takes an hour and a half. What is the airplane's average speed?

- A 402 miles per hour
- B 422 miles per hour
- C 432 miles per hour
- D 452 miles per hour

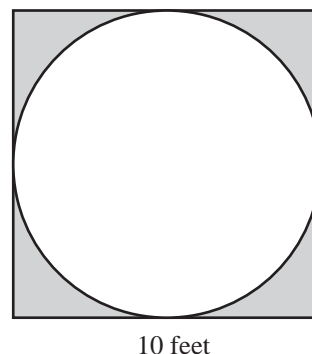
M02776



37. What is the value of x in the triangle shown above?

A 11
B 13
C 17
D 169

M02446

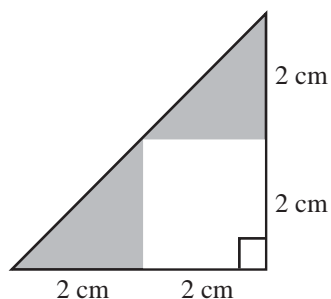


39. The largest possible circle is to be cut from a 10-foot square board. What will be the approximate area, in square feet, of the remaining board (shaded region)? ($A = \pi r^2$ and $\pi \approx 3.14$)

A 20
B 30
C 50
D 80

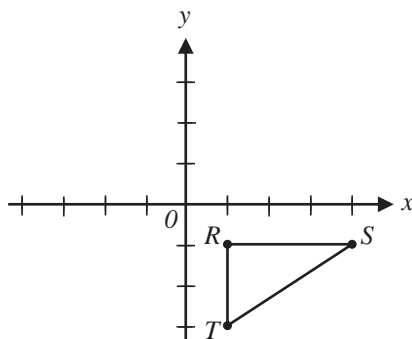
M00404

38. What is the area of the shaded region in the figure shown below? (Area of a triangle = $\frac{1}{2}bh$)

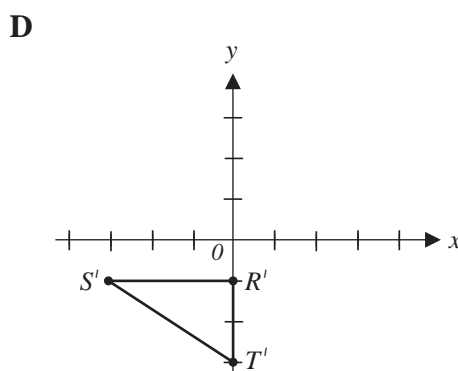
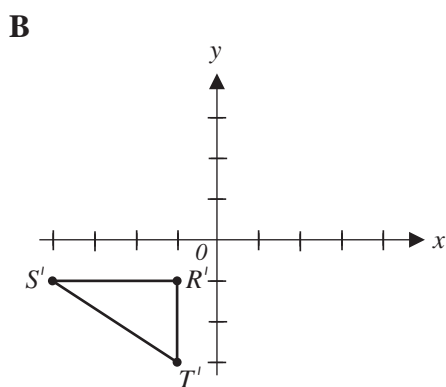
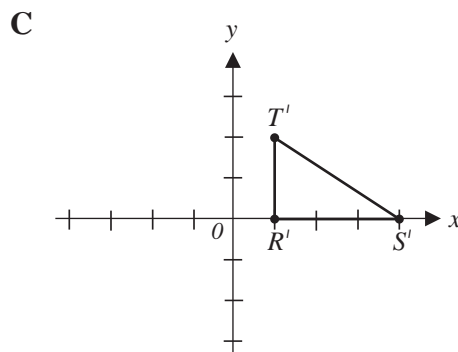
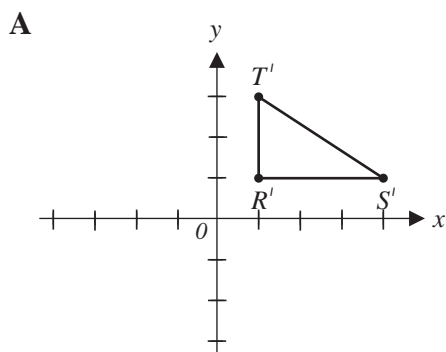


A 4 cm^2
B 6 cm^2
C 8 cm^2
D 16 cm^2

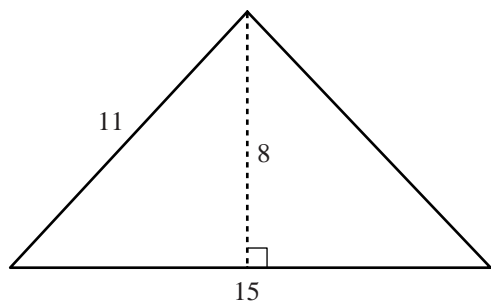
M02814



40. Which of the following triangles $R'S'T'$ is the image of triangle RST that results from reflecting triangle RST across the y -axis?



M02861



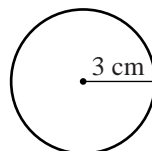
41. What is the area of the triangle shown above?

($A = \frac{1}{2}bh$)

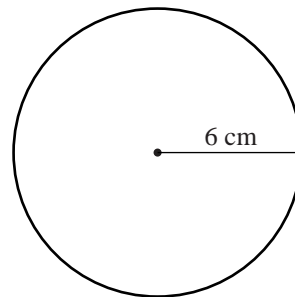
- A 44 square units
- B 60 square units
- C 88 square units
- D 120 square units

M00101

Circle x



Circle y



43. The two circles shown above have radii of 3 cm and 6 cm.

What is $\frac{\text{Circumference of Circle } x}{\text{Circumference of Circle } y}$? ($C = \pi d$)

- A $\frac{1}{4}$
- B $\frac{1}{2}$
- C $\frac{\pi}{4}$
- D $\frac{\pi}{2}$

M02217

42. One cubic inch is approximately equal to 16.38 cubic centimeters. Approximately how many cubic centimeters are there in 3 cubic inches?

- A 5.46
- B 13.38
- C 19.38
- D 49.14

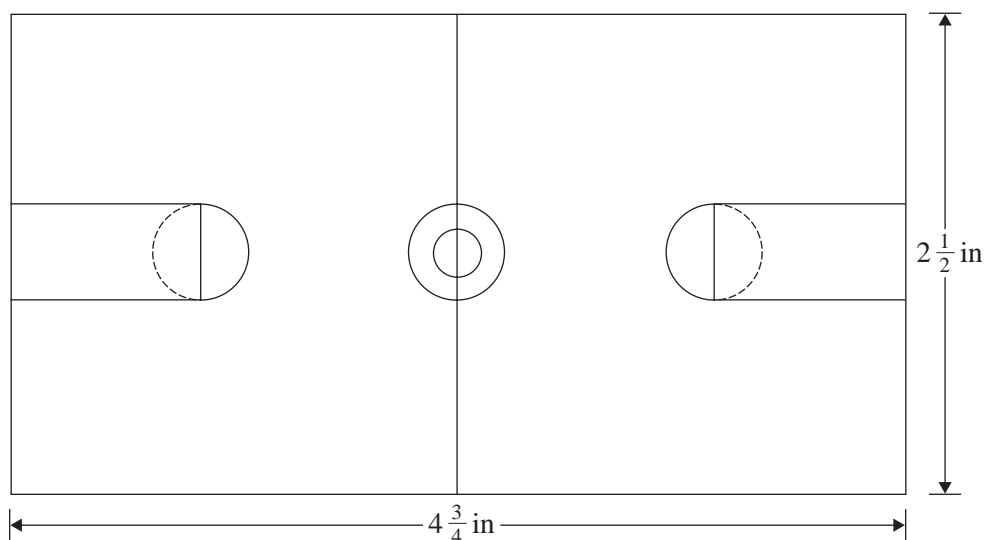
M02700

44. The points (1, 1), (2, 3), (4, 3), and (5, 1) are the vertices of a polygon. What type of polygon is formed by these points?

- A Triangle
- B Trapezoid
- C Parallelogram
- D Pentagon

M02718

45. The scale drawing of the basketball court shown below is drawn using a scale of 1 inch (in) = 24 feet (ft).



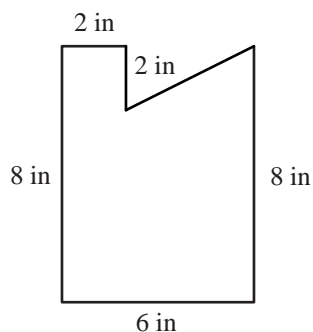
What is the length, in feet, of the basketball court?

- A 90 ft
- B 104 ft
- C 114 ft
- D 120 ft

M02233

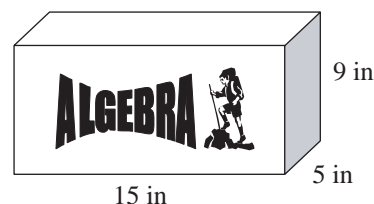
46. A right triangle is removed from a rectangle as shown in the figure below. Find the area of the remaining part of the rectangle.

(Area of a triangle = $\frac{1}{2}bh$)



- A 40 in²
- B 44 in²
- C 48 in²
- D 52 in²

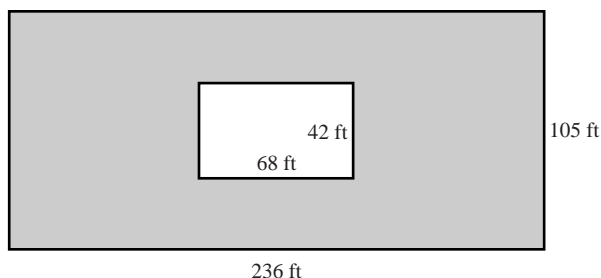
M02093



48. What is the volume of the shoebox shown above in cubic inches (in³)?

- A 29
- B 75
- C 510
- D 675

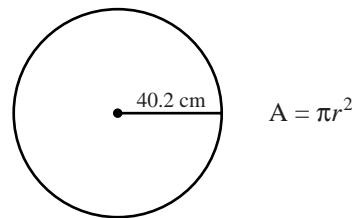
M02629



47. A rectangular pool 42 feet by 68 feet is on a rectangular lot 105 feet by 236 feet. The rest of the lot is grass. Approximately how many square feet is grass?

- A 2,100
- B 2,800
- C 21,000
- D 28,000

M00311



49. Louis calculated the area of the circle above and got an answer of 50.769 cm². He knew his answer was wrong because the correct answer should be about

- A $4 \times 4 \times 4 = 64$
- B $3 \times 3 \times 40 = 360$
- C $31 \times 4 \times 4 = 496$
- D $3 \times 40 \times 40 = 4800$

M00338

- 50. The table below shows the flight times from San Francisco (S.F.) to New York (N.Y.).**

Leave S.F. Time	Arrive N.Y. Time
8:30 A.M.	4:50 P.M.
12:00 noon	8:25 P.M.
3:30 P.M.	11:40 P.M.
9:45 P.M.	5:50 A.M.

Which flight takes the longest?

- A** The flight leaving at 8:30 A.M.
- B** The flight leaving at 12:00 noon
- C** The flight leaving at 3:30 P.M.
- D** The flight leaving at 9:45 P.M.

M00376

- 51. What is the y-intercept of the line $2x - 3y = 12$?**

- A** (0, -4)
- B** (0, -3)
- C** (2, 0)
- D** (6, 0)

M02591

- 52. Which of the following statements describes parallel lines?**

- A** Same y-intercept but different slopes
- B** Same slope but different y-intercepts
- C** Opposite slopes but same x-intercepts
- D** Opposite x-intercepts but same y-intercept

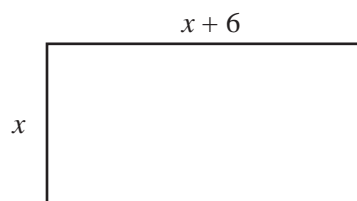
M02610

- 53. Assume y is an integer and solve for y .**

$$|y + 2| = 9$$

- A** $\{-11, 7\}$
- B** $\{-7, 7\}$
- C** $\{-7, 11\}$
- D** $\{-11, 11\}$

M02242



- 54. The length of the rectangle above is 6 units longer than the width. Which expression could be used to represent the area of the rectangle?**

- A** $x^2 + 6x$
- B** $x^2 - 36$
- C** $x^2 + 6x + 6$
- D** $x^2 + 12x + 36$

M00402

$$\frac{20}{x} = \frac{4}{x - 5}$$

- 55. Which of the following is equivalent to the equation shown above?**

- A** $x(x - 5) = 80$
- B** $20(x - 5) = 4x$
- C** $20x = 4(x - 5)$
- D** $24 = x + (x - 5)$

M02403

56. If x is an integer, which of the following is the solution set for $3|x| = 15$?

- A** $\{0, 5\}$
- B** $\{-5, 5\}$
- C** $\{-5, 0, 5\}$
- D** $\{0, 45\}$

M00059

59. Which of the following could be the equation of a line parallel to the line $y = 4x - 7$?

- A** $y = \frac{1}{4}x - 7$
- B** $y = 4x + 3$
- C** $y = -4x + 3$
- D** $y = -\frac{1}{4}x - 7$

M02651

57. What are the coordinates of the x -intercept of the line $3x + 4y = 12$?

- A** $(0, 3)$
- B** $(3, 0)$
- C** $(0, 4)$
- D** $(4, 0)$

M02462

60. $\begin{cases} y = 3x - 5 \\ y = 2x \end{cases}$

What is the solution of the system of equations shown above?

- A** $(1, -2)$
- B** $(1, 2)$
- C** $(5, 10)$
- D** $(-5, -10)$

M02649

58. Which of the following is equivalent to $1 - 2x > 3(x - 2)$?

- A** $1 - 2x > 3x - 2$
- B** $1 - 2x > 3x - 5$
- C** $1 - 2x > 3x - 6$
- D** $1 - 2x > 3x - 7$

M02231



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Math Sample Items Item Map

Item No.	KEY	Strand
1	C	Grade 7 - Number Sense
2	A	Grade 7 - Number Sense
3	B	Grade 7 - Number Sense
4	B	Grade 7 - Number Sense
5	A	Grade 7 - Number Sense
6	B	Grade 7 - Number Sense
7	D	Grade 7 - Number Sense
8	C	Grade 7 - Number Sense
9	C	Grade 7 - Number Sense
10	B	Grade 7 - Number Sense
11	B	Grade 7 - Number Sense
12	D	Grade 7 - Number Sense
13	C	Grade 7 - Math Reasoning (Number Sense)
14	C	Grade 7 - Math Reasoning (Number Sense)
15	C	Grade 6 - Statistics, Data Analysis, and Probability
16	B	Grade 7 - Statistics, Data Analysis, and Probability
17	B	Grade 6 - Statistics, Data Analysis, and Probability
18	B	Grade 7 - Statistics, Data Analysis, and Probability
19	D	Grade 6 - Statistics, Data Analysis, and Probability
20	C	Grade 6 - Statistics, Data Analysis, and Probability
21	B	Grade 7 - Statistics, Data Analysis, and Probability
22	C	Grade 7 - Statistics, Data Analysis, and Probability
23	B	Grade 7 - Algebra Functions
24	C	Grade 7 - Algebra Functions
25	C	Grade 7 - Algebra Functions
26	B	Grade 7 - Algebra Functions
27	D	Grade 7 - Algebra Functions
28	C	Grade 7 - Algebra Functions
29	B	Grade 7 - Algebra Functions
30	A	Grade 7 - Algebra Functions

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31	D	Grade 7 - Algebra Functions
32	C	Grade 7 - Algebra Functions
33	A	Grade 7 - Algebra Functions
34	C	Grade 7 - Math Reasoning (Algebra Functions)
35	C	Grade 7 - Math Reasoning (Algebra Functions)
36	D	Grade 7 - Algebra Functions
37	B	Grade 7 - Measurement and Geometry
38	A	Grade 7 - Measurement and Geometry
39	A	Grade 7 - Measurement and Geometry
40	B	Grade 7 - Measurement and Geometry
41	B	Grade 7 - Measurement and Geometry
42	D	Grade 7 - Measurement and Geometry
43	B	Grade 7 - Measurement and Geometry
44	B	Grade 7 - Measurement and Geometry
45	C	Grade 7 - Measurement and Geometry
46	B	Grade 7 - Measurement and Geometry
47	C	Grade 7 - Measurement and Geometry
48	D	Grade 7 - Measurement and Geometry
49	D	Grade 7 - Math Reasoning (Measurement and Geometry)
50	B	Grade 7 - Math Reasoning (Measurement and Geometry)
51	A	Algebra 1
52	B	Algebra 1
53	A	Algebra 1
54	A	Algebra 1
55	B	Algebra 1
56	B	Algebra 1
57	D	Algebra 1
58	C	Algebra 1
59	B	Algebra 1
60	C	Algebra 1